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ABSTRACT

A group of 20 students in a self-contained kindergarten classroom was selected to receive enrichment using computer software. Of those 20, 10 were randomly selected to use "Bailey's Book House" on a Macintosh computer. "Bailey's Book House" and the Macintosh computer were considered to be the newer models. The other 10 students used "First Letter Fun" on a Laser 128 EX computer, both considered to be the older models. Students were given a pretest before beginning each enrichment. The same test was given as a posttest after eight weeks of enrichment. Every student received 10 minutes of letter instruction every day, along with 15 minutes of computer enrichment. All of the students showed progress after receiving instruction and enrichment as shown by an increase in posttest scores. The Macintosh group did not show a significant different from the Laser 128 EX group when statistical comparisons were made. Results of the research indicate that the older computers and software are just as effective as newer computers and software. (Contains 20 references.) (AEF)

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ED 443 388

A COMPARISON OF OLD COMPUTERS TO NEW COMPUTERS USING FIRST LETTER FUN™ AND BAILEY'S BOOK HOUSE™

A Research Paper

Presented to the

Department of Teacher Education

Johnson Bible College

In Partial Fulfillment

of the Requirement for the Degree

Master of Arts in Educational Technology and Bible

by

Christine Alison Boring

April 2000

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APPROVAL PAGE

This Research Paper by Christine Alison Boring is accepted in its present form by the Department of Teacher Education at Johnson Bible College as satisfying the research paper requirements for the degree Master of Arts in Educational Technology and Bible.

Chairperson, Examining Committee

Member, Examining Committee

Member, Examining Committee

Member, Examining Committee

May 5, 2000
Date

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ABSTRACT

There are old computers and software in schools. Using the old computers and Software is not considered effective by some educators. While the new technology provides greater possibilities for word processing, publishing, and much more, the old technology may also be effective in the teaching letter recognition in kindergarten. If so, the life of computers in the schools could be extended.

A group of 20 students in a self-contained kindergarten classroom were selected to receive enrichment using computer software. Of those 20 kindergartners, 10 were randomly selected to receive enrichment using Bailey's Book House™ on a Macintosh™ computer. Bailey's Book House™ and the Macintosh™ computer were considered to be the newer models. The other 10 students received enrichment using First Letter Fun™ on a Laser 128 EX™ computer. The Laser 128 EX™ is comparable to the Apple IIE™ computer. The Laser 128 EX™ computer and First Letter Fun™ were considered to be the older models. The students were given a pretest before beginning the enrichment. The same test was given as a posttest after eight weeks of enrichment. Every student received 10 minutes of letter instruction every day along with 15 minutes of computer enrichment.

The mean from the pre-test was compared to the mean of the post-test for group A in order to look for a significant increase at the 0.5 level. The same process occurred for group B. The amount of increase from group A was then compared to the amount of increase for group B to see if there was a significant difference at the 0.5 level.

The means of the pre- and post-tests were compared to look for significant increase at the 0.5 level. The amount of increase from group A was then compared to the

increase from group B to see if there was a significant difference. The analysis was a t-test of significance.

All of the students showed progress after receiving instruction and enrichment as shown by an increase in posttest scores. The Macintosh™ group did not show a significant difference from the Laser 128 EX™ group when statistical comparisons were made. The results of the research indicate that the older computers and software are just as effective as the newer computers and software.

ACKNOWLEDGMENTS

Grateful acknowledgment is made for the valuable suggestions and help given to me by the Examining Committee at Johnson Bible College and to my uncle Syd Isaacs.

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Chapter 1

INTRODUCTION

Significance of the Problem

Many educators subscribe to the popular point-of-view that newer is better, particularly when it comes to educational technology. However, school funding is not able to keep up with the constant changes. "Creating Publishing Centers doesn't require Pentium II's loaded with the latest version of Windows, Photoshop, and Hyperstudio" (D'Ignazio, p. 44). Classroom teachers are faced with using the equipment and software that is already available in the classroom. Any technology related materials need to be purchased wisely and not on a whim. "Resourcefulness is the key quality that educators must exhibit..." (D'Ignazio, p. 44).

The Laser 128EX™ computer with First Letter Fun™ software and the Macintosh™ computer with Bailey's Book House™ software were chosen for this study because of the availability and appropriateness of the age level. There were two Macintosh™ computers with software that had been approved as age appropriate by school supervisors. One piece of age appropriate software available was Bailey's Book House™ produced by Edmark™ Corporation. There were also two Laser 128EX™ computers which run with 5.25 floppy disks. These computers are comparable to Apple IIE™ computers. The software First Letter Fun™, which was produced by the Minnesota Educational Computing Corporation™ , was the most age appropriate piece of software for this computer available in this classroom. There was an abundance of both computers and software in the school because many teachers had decided to use the newer Macintosh™ computers and software.

Statement of the Problem

There are old computers and software in schools. Using the old computers and software is not considered effective by some educators. While the new technology provides greater possibilities for word processing, publishing, and much more, the old technology may also be effective in teaching letter recognition in kindergarten. If so, the life of computers in the schools could be extended. Thus, making more computers available to students.

Definition of Terms

These terms are listed below in order that the reader will have more clarity when reading the paper.

Old computers: Computers that do not have multimedia capabilities.

New computers: Computers that do have multimedia capabilities.

CAI: Computer Assisted Instruction

Limitations of the Study

The limitation of this study was low sample numbers. There were 20 subjects enrolled in the class. According to school board guidelines, cross-teaching is not allowed in grades below third.

Another limitation of the study was the selection of only two software applications.

Assumptions

The assumption was made that the two groups would be divided equally according to capital letter knowledge.

The assumption was made that the teaching of the letters is done with equal time and enthusiasm.

Null Hypotheses:

1. Students receiving enrichment with Bailey's Book House™ on a Macintosh™ computer will have no significant increase in capital letter recognition at the 0.05 level of significance as measured by capital letter test.
2. Students receiving enrichment with First Letter Fun™ on a Laser 128 EX™ Computer will have no significant increase in capital letter recognition at the 0.05 level of significance as measured by capital letter test.
3. Students using a Laser 128EX™ computer will have no significant increase in capital letter recognition over students using a Macintosh™ computer at the 0.05 level of significance as measured by capital letter test.

Chapter 2

REVIEW OF RELATED LITERATURE

Letter Naming

Children need to be able to recognize and name the letters of the alphabet in order to be successful readers. For this reason, children must be able to identify the letters of the alphabet. "Facility of letter names eases the process of learning to read" (Walsh, p. 110). Children need to also be able to identify the letters quickly and without guessing. "For kindergarten children, letter naming speed was very strongly associated with subsequent progress in reading" (Walsh, p.108).

Many educators agree that reading success is very closely related to letter naming. "There is no way that beginners can attain mature levels of reading and writing without acquiring knowledge of the alphabetic system…" (Metsala, p. 32). The inability to recognize and identify capital letters hinders literacy. "To the beginner, lack of facile letter-name knowledge is a hindrance." (Walsh, p.110). Therefore, it is crucial that children are able to identify capital letters. "Educators suspect that it is this other knowledge (e.g., learning about letter features…) that children gain along with letter naming that is crucial to literacy learning" (McGee, p. 217) Capital letter recognition is often taught first. "Alliteration detection and uppercase-letter knowledge were significant predictors (of word recognition)" (Metsala, p. 278).

Letter naming is an integral part of the kindergarten curriculum. "Phonemic awareness and letter knowledge are important determiners of reading acquisition during the first couple of years" (Metsala, p. 33). "Alphabet learning is included in many preschool and kindergarten literacy programs" (McGee, p. 216).

Technology in Schools

Technology for schools is changing at a rapid pace. The United States Department of Education's Office of Educational Technology has issued the following quote, "Modern computers and learning devices will be accessible to every student" (Office of Educational Technology, 1998) "The reality is that new technologies are displacing old ones at an unprecedented speed, a speed that is only accelerating" (Thornburg, p. 18). The fact is that even though new technology is coming into the schools, the old technology is still there. "To make technology a viable instructional tool requires schools to have enough computers to provide full, easy access for all students..."(Office of Educational Technology, 1998). The Office of Educational Technology does not say that the technology must be new. Therefore, schools must be willing to use what they have. The excuse that the computer and/or software is old is used to often.

"Administrators are realizing the implication of increased use of technology..." (Poole, p. 61).

> It is not enough to just bring in some new flashy interactive multimedia. We need to spend some time thinking about what we are trying to accomplish and in the process we may have to grapple with what we have to change to get different results (Thornburg, p. 18).

"The focus should always be on student learning, not on having the latest and best technology" (Coulter, p.20). Administrators realize that a great deal of money involved in purchasing brand new technology. "Let's face it- technology implementation is expensive" (Coulter, p. 19).

Software

Choosing the software to be used for computer assisted instruction is an important assignment. "Curricular areas that have been hard to teach because of low student interest or motivation may be significantly strengthened through the use of a carefully selected and integrated educational computer game" (Merrill, p. 98). However, it is important that software is carefully chosen. "Software of any type cannot simply be dumped into the classroom with the expectation that it will be used" (Bork, p. 118). Educators must assess their students needs and carefully choose software to meet those needs. "This is especially the case with discrimination or verbal information tasks that require student simply to memorize information" (Merrill, p. 98).

"Approximately 25 percent of the new software includes gems, appropriate software that meets children's developmental needs" (Haugland, p. 45). One of the "gems" is Bailey's Book House™. Baiely's Book House™ is a popular program for primary classrooms. "Bailey's Book House™ combines the best of educational theory with a loving attention to detail and an engagingly simple interface" (Eiser, p. 9). Haugland also states that "the challenge is finding the software which meets the curricular goals and developmental needs of you children" Haugland, p.46). "Bailey's Book House™ is one of the classic must-haves in early learning software" (Superkids, 1996). First Letter Fun™, produced by the Minnesota Educational Computing Corporation™ meets the curricular goals by providing a program that drills students on letter recognition. "Software has to allow the student to be doing the learning" (Schank, p. 16).

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Minnesota Educational Computing Corporation™ In the late 1970's, the Minnesota Educational Computing Corporation™, MECC™, was considered to be "the best you could find" (Olds, p. 16). Many educators are familiar with Minnesota Educational Computing Corporation™. Unfortunately, as times change, MECC™ began to disappear "when commercial publishers began to produce better quality programs" (Olds, p. 16) However, "because of the generality (of MECC™ programs), they will have much greater longevity in the classroom" (Olds, p. 16).

Edmark™ Edmark™ produces educational software that is used throughout computer curriculums. Their software is interactive and fun to use. "The programs have colorful, delightful graphics which lend an atmosphere of fun as children explore or practice, but are not overwhelming" (Bryant, p. 53).

Computer Assisted Instruction

Computers in the classroom have multiple purposes. Aside from word processing and data maintenance, computers offer "opportunities for the student to practice a particular learning task" (Merrill, p. 65). This type of practice is often referred to as computer assisted instruction. " A microcomputer with a variety of programs covering many different subject areas and ability levels is a more versatile and powerful tool" (Clement, p. 12) Using the computer as a tutor provides a unique opportunity for learning. " The unique characteristics of the computer would seem to allow for new educational strategies in which the interaction between the student and the learning material is individualized, attractive, and effective" (Erdner, p. 383). "CAI can be viewed as the computer as tutor" (Clement, p. 12).

"CAI is especially efficient for students (males and females) whose reading skills (i.e., prescores) are low" (Erdner, p. 382). When children are able to work one-on-one with the computer, the pressure of performing in front of others decreases. "Children need many experiences with alphabet letters in many contexts before they begin to understand the relationship between letters and sounds" (McGee, p. 224) In a study by Lea M. McGee and Donald J. Richgels, they found that one of the subjects (Kristen) was more interested in learning about letters on the computer (McGee, p. 222). "Children's interests in talking about and learning alphabet letters vary from context to context" (McGee, p. 222). Computer Assisted Instruction provides an opportunity for varied context.

Drill and Practice "One of the most common applications of the computer as a tutor is in drill and practice" (Merrill, p. 65). "Drill and practice involves any exercise, physical or mental, that is performed regularly and with constant repetition" (Merrill, p. 65). "The most widely used type of computer program is drill and practice" (Clement, p. 13). The computer does not teach the skill. It simply reinforces what has already been taught in the classroom. "CAI drill, like any drill, should complement teaching for meaning and should be balanced with other forms of practice and learning" (Clement, p. 16). "…drill-and-practice software typically has few bells and whistles…" (Oh, p. 74). The older drill and practice programs may not draw the crowds that flashy newer programs do, but it gets the job done in a simple way. "This application is easy for most teacher to understand, as it is not unlike other common approaches such as flashcards or programmed textbooks" (Clement, p. 13). "It (drill and practice) is often associated with rote-memory learning" (Merrill, p. 65).

The time spent on drill and practice is up to the student. "The more an individual practices, the more automatic the task becomes" (Rattanapian, p. 60). "The amount of time students spend on the computer doing drill and practice should not exceed their attention span and tolerance for such activities" (Merrill, p. 72). According to Merrill, "research has shown that even 15 minutes a day of computer-based drill can significantly improve student performance" (Merrill, p. 72). Both Bailey's Book House™ and First Letter Fun™ provide drill and practice.

Educator Opinions Many educators have strong opinions about computers and software. Their opinions are opinions, not published research. However, their expertise in the field of educational technology qualifies them for mention in this review.

Fred D'Ignazio and others have long championed for the one-computer classrooms and using some of the older technology found in the classroom. This is not to say that they do not support newer technology. They have simply found ways to use the stuff found in the storage closet.

While the argument is being made that older technology can still be used, no one disputes the value of newer technology. Newer technology is faster, brighter, has better sound, and is often more exciting. Newer machines are able to handle the dynamic software while older machines have trouble. In the end, the point that is trying to be made is that older technology should not be discarded just because it is older. It still has value in the classroom.

Chapter 3

METHODS AND PROCEDURES

Subjects of the Study

The subjects of the study were kindergarten students ages 4-6 years. They came from a variety of socioeconomic backgrounds. The school zone covered an area that included government assisted housing to homes in the $500,000 price range. The students came to kindergarten with a wide range of school experience. Some had preschool or head start experiences, while others had not attended any kind of schooling.

Timeline of the Study

The study lasted for 12 weeks. During that time, each letter of the alphabet was taught. The enrichment on the four computers was completed during this time frame.

Testing

The students took a pre-test to assess current letter recognition knowledge. At the end of the study, students took a post-test. The pre- and post-tests were the same test. The test consisted of showing the students the capital letters in the order as found in the Brigance First Grade Screening. This was a random order. The Brigance was used because it is the standard screening given to kindergarten students in this school system.

Experimental Process

There were 14 boys and 6 girls enrolled in the class. The process that was used to place students into groups was as follows. The boys names and the girls names were separated. Each name was placed on a small piece of paper. The boys names were placed in one pile and the girls names were placed in another pile. The 14 boys and 6 girls

were placed on lists in an alternate manner. This procedure created 2 equal groups with 7 boys and 3 girls in each group.

Once divided into groups, each student was given the pre-test. The students were given one opportunity to identify the letter. Each student had 10 seconds to identify the letter. If the wrong letter was said or no letter was said, then the response was counted as incorrect. An example of a student score might be 22 out of 26 letters correctly recognized. When all the students in the group had been given the pre-test, a group mean score was figured. This was done for both groups.

All the students received the same instruction. The alphabet lesson was taught in a large group setting with all students participating. The alphabet lessons occurred daily. One group of students received enrichment on an older computer (Laser 128EX™) using older software (First Letter Fun™). The students using First Letter Fun™ enriched their capital letter knowledge by drill and practice. The students had to identify the missing capital letter. The other group received enrichment on a newer computer (Macintosh™) using newer software (Bailey's Book House™). The students using Bailey's Book House™ received enrichment by identifying the missing letter on the roller coaster car. Each student received 15 minutes of enrichment a day on the computer. This amount of time was chosen due to computer availability, time restraints, and research as noted in the literature review.

At the end of the 12 week period, after the entire alphabet had been taught, a post-test was given. The post-test was the same as the pre-test. An individual score was once again taken and a group mean was figured for each group.

Statistical Analysis

The mean from the pre-test was compared to the mean of the post-test for group A in order to look for a significant increase at the 0.5 level. The same process occurred for group B. The amount of increase from group A was then compared to the amount of increase for group B to see if there was a significant difference at the 0.5 level.

The means of the pre- and post-tests were compared to look for significant increase at the 0.5 level. The amount of increase from group A was then compared to the increase from group B to see if there was a significant difference. The analysis was a t-test of significance.

Chapter 4

RESULTS

Capital Letter Recognition-Bailey's Book House™

The Capital Letter Recognition test contained 26 items. The mean of the pretest was 15.10. After the enrichment, a posttest was given resulting in a mean of 22.20. A t-test was conducted and showed no significant increase in scores (See Table 1).

Hypothesis one stated that students receiving enrichment with Bailey's Book House™ on a Macintosh™ computer would have no significant increase in capital letter recognition at the 0.05 level of significance. The hypothesis was retained at the 0.05 level of significance.

Table 1

Capital Letter Recognition- Bailey's Book House™

Groups	N	Mean	Mean Difference	Std. Error of Difference	t-ratio	Sig. 2-tailed
Pre	10	15.10				
			-7.10	3.89	-1.827	.084*
Post	10	22.20				

*Not Significant

Capital Letter Recognition- First Letter Fun™

The Capital Letter Recognition test contained 26 items. The mean of the pretest was 14.40. After the enrichment, a posttest was given resulting in a mean of 20.40. A t-test was conducted and showed no significant increase in scores (See Table 2).

Hypothesis one stated that students receiving enrichment with First Letter Fun™ on a Laser 128 EX™ computer would have no significant increase in capital letter recognition at the 0.05 level of significance. The hypothesis was retained at the 0.05 level of significance.

Table 2

Capital Letter Recognition- First Letter Fun™

Groups	N	Mean	Mean Difference	Std. Error of Difference	t-ratio	Sig. 2-tailed
Pre	10	14.40				
			-6.00	3.80	-1.581	.088*
Post	10	20.40				

*Not Significant

Improvement

The capital letter recognition test contained 26 items. The mean of the Macintosh™ improvement was 7.10. The mean of the Laser 128 EX™ was 6.00. The means were compared using a t-test. There was no significant difference found (See Table 3).

Hypothesis 3 stated that students using a Laser 128 EX™ computer would have no significant increase in capital letter recognition over students using a Macintosh™ computer at the 0.05 level of significance. The hypothesis was retained at the 0.05 level of significance.

Table 3

Capital Letter Recognition Improvements

Groups	N	Mean	Mean Difference	Std. Error of Difference	t-ratio	Sig. 2-tailed
[illegible]	10	7.10				
			1.10	2.95	.373	.713*
[illegible]	10	6.00				

*Not Significant

Chapter 5

SUMMARY, CONCLUSION, RECOMMENDATIONS

Summary

A group of 20 students in a self-contained kindergarten classroom were selected to receive enrichment using computer software. Of those 20 kindergartners, 10 were randomly selected to receive enrichment using Bailey's Book House™ on a Macintosh™ computer. The other 10 students received enrichment using First Letter Fun™ on a Laser 128 EX™ computer. The students were given a pretest before beginning the enrichment. The same test was given as a posttest after eight weeks of enrichment. Every student received 10 minutes of letter instruction every day along with 15 minutes of computer enrichment.

Conclusion

All of the students showed progress after receiving instruction and enrichment as shown by an increase in posttest scores. The Macintosh™ group did not show a significant difference from the Laser 128 EX™ group when statistical comparisons were made. The results of the research indicate that the older computers and software are just as effective as the newer computers and software. The small number of participants could have affected the statistical significance.

Recommendations

The researcher recommends that all students should receive enrichment using commercially produced alphabet software. Newer software programs have features that are attractive to children. The newer software is able to keep records of student

achievement which helps the teacher keep track of individual student's progress and status. A comparison of computer enrichment to non-computer enrichment could be done in a later study. The type of computer chosen to run the software would depend on the system requirements of the software. All students showed growth in capital letter recognition. The students enjoyed their task on the computer. Upon conclusion of the study, all students were able to use both types of software.

The researcher also recommends collecting a larger amount of data to test for significant differences. The pre and posttests could be collected each year in order to gather a larger sample.

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APPENDICES

KNOX COUNTY SCHOOLS
ANDREW JOHNSON BUILDING

Dr. Charles Q. Lindsey, Superintendent

November 12, 1999

Ms. Christine A. Boring
10435 Fantasy Way
Knoxville, Tennessee 37932

Dear Ms. Boring:

You are granted permission to contact appropriate building-level administrators concerning the conduct of your proposed research study entitled, "Old versus New: A Comparison of Old Computers to New Computers Using *First Letter Fun* and *Bailey's Book House*." In the Knox County schools final approval of any research study is contingent upon acceptance by the principal(s) at the site(s) where the study will be conducted.

In all research studies names of individuals, groups, or schools may not appear in the text of the study unless *specific* permission has been granted through this office. The principal researcher is required to furnish this office with one copy of the completed research document.

Good luck with your study. Do not hesitate to contact me if you need further assistance or clarification.

Yours truly,

Samuel E. Bratton, Jr.

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Project No. 021

P.O. Box 2188 • 912 South Gay Street • Knoxville, Tennessee 37901-2188 • Telephone (423) 594-1800

Permission for Student Involvement

My child, _____, has permission to participate in a graduate study. The student, school, and the county will NOT be mentioned in the study results.

This study will be using computer technology as enrichment to look for a significant increase in letter recognition at the kindergarten level. The study will be conducted by Christine Boring, a graduate student at Johnson Bible College, who is pursuing a masters degree in educational technology.

_____ _____

Parent's Signature Date